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ABSTRACT

This study investigated student preferences for either teacher-written or computer-generated marking of written compositions. Ninety-seven high school students typed assigned compositions on a word processor. Three skills pre-selected by the teacher were checked on each composition. Students were randomly assigned to treatments so that, on the first composition, half were marked by the teacher and the other half by a computer proofing program. On the second assignment, the teacher/computer groups were switched to the opposite type of marking. On a third assignment, students chose either teacher or computer marking. Results of a questionnaire showed that after experiencing both types of marking, 87% of the students selected teacher marking over computer marking. The most common reasons for selecting the teacher were the more personalized marking, ease of understanding, the marking of additional areas, and the fact that the teacher is the ultimate grader. Eighty-six percent of the students reported that they liked using word processors, and 93% reported that word processors made writing easier. (32 references) (Author/GL)

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Title:

**Diagnostic Evaluation of Composition Skills:
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ABSTRACT

This study investigated student preferences for either teacher-written or computer-generated marking of written compositions. Ninety-seven high school students typed assigned compositions on a word processor. Three skills pre-selected by the teacher were checked on each composition. Students were randomly assigned to treatments so that, on the first composition, one-half were marked by the teacher and the other half by a computer proofing program. On the second assignment, the teacher/computer groups were switched to the opposite type of marking. On a third assignment, students chose either teacher or computer marking. Results showed that, after experiencing both types of marking, 87% of the students selected teacher marking over computer marking. The most common reasons for selecting the teacher were the more personalized marking, ease of understanding, additional areas marked, and the fact that the teacher is the ultimate grader. Students reported that they liked using word processors (86%) and that word processors made writing easier (93%).

Diagnostic Evaluation of Composition Skills: Student Choice

The introduction of computers into language arts classes has lagged behind their earlier use in such traditionally strong computer areas as mathematics, science, and business. Perhaps because of the wide use of computers for word processing in business classes, the first uses of computers in language arts were primarily as word processing devices. At times attention has focused on the impact of the computer itself (Frase, 1987) in the writing process. When computers became more widely accepted and less intimidating, educators observed differential effects with various users and began to investigate (Baer, 1988; Powell, 1984). Emphasis has shifted from hardware and its effects on students to writing and how computers interact in this complex process (Auten, 1984; Dees, 1985; Wheeler, 1985).

In addition to questions regarding the impact of both hardware and software on the pedagogy of writing, other questions arose. Student attitudes concerning computer use (Johnson, 1988; Le, 1989; MacArthur, 1988) were studied. The effect of computers on student motivation has been studied by Lepper (1985) and by Seymour (1986). Studies by Daly (1978) and Faigley, Daly, and Witte (1981) dealt with student apprehension during the writing process. However, there is evidence that indeed a place exists for computers in teaching in general and in teaching writing specifically (Marcus, 1987a; Marcus, 1987b).

Revision has been identified as a desirable writing skill (Bean, 1983; Collier, 1983; Kurth, 1987; Monahan, 1984; Murray, 1978). The present study was the outgrowth of several informal projects with various teachers which explored ways of motivating students in writing classes to do more revision. Previously, students were reluctant to re-write papers that had been handwritten. The time and effort of re-writing was often beleaguered by new mistakes introduced during the re-writing process. Even when the students were provided with specific items to be corrected and when offered a higher grade upon correction and re-submission, students elected not to re-write, instead accepting a lower grade. Case studies demonstrated student willingness to re-write when provided with opportunity and facilities such as a word processing lab. These outcomes are similar to those described by Watt (1984). Microcomputers have been shown to be effective instruments of revision (Levin, & Boruta, 1984; Levin, Boruta, & Vasconcellos, 1983). In addition, computers have been shown to play a positive role in continuing

motivation of students (Seymour, Sullivan, Story, & Mosley, 1987). In general, students like computers (McGarvey, 1986).

The purpose of the present study was to determine whether students preferred to have their compositions marked by their teachers or by a computer. After having a composition scored by a computer and another by their teachers, students were given a choice between the computer and teacher to score their third composition. Data were collected and analyzed on their choice, the reasons for it, and their attitudes toward the use of word processors. Pre-project and post-project questionnaires were used to assess student preferences and attitudes toward these variables.

Student choice of evaluation method was considered to be important because a diagnostic writing lab had been proposed for the English Department in the school in which the study was conducted. Students made their choice of evaluation method on the post-project questionnaire. Studies of continuing motivation (Herndon, 1987) have revealed that forced choice of a method of instruction or evaluation is a reliable indicator of future student preferences. A diagnostic computer program, MacProof[®], was chosen from among those that were available. The MacProof[®] v 2.0 program was used to evaluate student papers and to provide written feedback to the students.

Method

Subjects

Subjects were 97 (36 male and 61 female) juniors and seniors, enrolled in four classes at a suburban high school in Arizona. One of the classes was for college-bound seniors, the other three were made up of average ability students. The Fifty-nine of the subjects (61%) reported their out of school use of computers to be zero hours per week, 14 (14%) less than one hour per week, 16 (17%) between one and 4 hours, and six (6%) more than four hours. The classes of two male instructors were chosen because of the instructors prior exposure to computer usage for writing and their positive orientations toward students.

Materials

Networked Apple IIe computers running AppleWorks[®] word processing software were used as work stations. For each assignment three writing skills were checked. These skills corresponded to a recently taught skill, a previously taught skill (more than three weeks prior), and a universal skill such as spelling.

On exercise one the three areas of concentration were vague terms, forms of the "be" verb, and spelling. On exercise two the three areas of concentration were, punctuation, confused terms, and spelling.

The computer took each of the files that the students had entered and printed it double spaced. The files for the computer marked compositions were further processed with MacProof®. By selecting each of the three skills to be checked from a menu of twenty-one possible areas and having the computer print out a list of errors. Depending on the type of check selected, the printout would correspond to one of the following: a list of misspelled words, or a questioned item, such as a vague term, highlighted by boldfacing within a sentence fragment, coupled with a short 3-5 line explanation of why the word is vague, along with suggestions on how to improve the sentence. If there were no mistakes for a given skill, there was no page printed. Separate printouts were provided for each skill checked and stapled to the corresponding composition printout.

Teachers wrote directly on the student printouts from the teacher marked group using checkmarks and comments normally used by that teacher. In addition to the three designated skills the teachers often marked other areas and added personalized comments.

Procedures

Before starting the project, students were familiarized with the operation of the computer and AppleWorks® word processing program, including data entry and simple editing procedures, and with the procedures for saving and retrieving files on a network. An existing microcomputer lab in the Mathematics Department was used with a separate off-line process to evaluate the student papers. Prior to the first writing assignment, the teacher administered a pre-project questionnaire dealing with prior computer experience and attitudes toward computer usage to all students. The mechanics of saving and retrieving files from a network was also reviewed.

Upon completion of the pre-project questionnaire, the students were told that they would be part of a study on the use of writing labs and that the project would consist of three exercises, with one-half of the papers randomly assigned to either teacher-marked or computer-marked treatments on exercise one. On the second exercise the two groups would be switched so that all students experienced both methods of evaluation.

For each of the three exercises the topic was presented to the students three days before going to the computer lab. The compositions were to be approximately 250-350 words in length and composed at the terminal, although students were encouraged to plan out their writing ahead of time, using pre-writing activities such as outlining and organizing as practiced in the usual class activities. On the designated day, the whole class was taken to the lab to enter their compositions into the word processor. On the first exercise students did not know which marking method would be used on their papers. Student files were saved to a central storage device from which copies of the files were ported to a Macintosh computer for analysis using the MacProof[®] program. Marked copies were returned to students for each assignment within two class days. The three exercises were spaced approximately 8-10 school days apart, depending on lab availability and class readiness.

Students selected either the teacher or the computer as the evaluator of their draft copy on the third written composition. The selection took place after the students entered their composition into the computer. The instructor noted which method each student wished to have applied to the material, and the papers were marked accordingly.

Criterion Measures

The criterion measure was a four-item questionnaire administered to all students at the conclusion of the study. The four questionnaire items asked students (1) Which evaluation method did you chose on cycle three? (2) Word processors make writing easier - (Yes or No)? (3) If a writing lab were available would you use a computerized style, grammar, and spelling checker for assignments? and, (4) What made you choose either the computer or teacher evaluation for the third cycle?

Post-Project Questionnaire responses to "What made you choose either the computer or teacher evaluation" were classified by the experimenter as pro or con teacher and pro or con computer.

A five-item Pre-Project Questionnaire was also administered to all students. The Pre-Project Questionnaire dealt with student attitudes toward computers and student use of and experience with computers and word processing, as well as with student attitudes toward teacher grading of papers and a student self-ranking of writing ability.

Data analysis

All questionnaire responses were analyzed using Chi-square.

Results

Eighty-four of the 97 students (87%) chose to have the teacher mark their third composition and 13 students (13%) chose to have the computer mark it. Chi-square analysis revealed that this preference for teacher over computer evaluation was statistically significant, $\chi^2 (1, N=97) = 51.97$, $p < .001$.

Student responses to the question "What made you choose either the computer or teacher evaluation for the third cycle [exercise]?" were classified into common categories for ease of understanding and reporting.

Students wrote a total of 70 pro-teacher statements and 18 pro-computer statements. Students also wrote 16 negative statements about the computer, but none about the teachers. The frequency of each type of response is shown in Table 1. It can be seen from the table that the most frequent pro-teacher

PLEASE INSERT TABLE 1 ABOUT HERE

responses were personal help (24 responses) and ease of understanding (23 responses). Other frequent pro-teacher responses were that the teacher checked additional areas (15 responses) and that the teacher is the ultimate grader (12 responses). The most frequent pro-computer response (7 students or 7%) was that it catches more mistakes than the teacher, and the most common con-computer response was that it catches too many mistakes (8 responses). There were no con-teacher responses.

Responses to several other questions on the Pre-Project Questionnaire and Post-Project Questionnaire are summarized in Table 2. On the Pre-Project Questionnaire 83 of the 97 students

PLEASE INSERT TABLE 2 ABOUT HERE

(86%) reported that they liked using word processors and 14 (14%) reported that they did not. Seventy-one students (73%) responded that they thought typed papers received higher grades than handwritten ones, whereas 26 (27%) indicated they did not think so. The difference between teachers on this item was not statistically significant.

Table 1
Student Reasons for Choice of Teacher or Computer

Pro Teacher	Number
Personal help	24
Easier to understand	23
Additional areas checked (style etc.)	15
Ultimate grader of end product	12
Specific, in place comments	7
Alive/human grader	4
Pro Computer	
Thorough - catches more mistakes than teacher	7
Lists mistakes	5
Efficient	5
Easy	4
Con Computer	
Too many mistakes (non-mistakes listed)	8
Too confusing	5
Con Teacher	
None	

Table 2
Student Attitudes

Question	Yes	No
Pre-3 Like using word-processors	83 (86%)	14 (14%)
Pre-4 Higher grades - typed papers	71 (73%)	26 (27%)
Post-2 Word processors make writing easier	90 (93%)	7 (7%)
Post-3 Use lab (w/more features) if available	76 (78%)	21 (22%)
Male	25 (69%)	11 (31%)
Female	51 (84%)	10 (16%)

On the Post-Project Questionnaire, 90 students (93%) responded that they thought word processors make writing easier, whereas only seven students thought they did not. Seventy-six students (78%) reported that they would use a writing lab if one were available, and 21 students (22%) reported that they would not. A significantly higher number of girls (84%) than boys (69%) reported that they would use the writing lab, $\chi^2 (1, N=97) = 16.7, p < .005$.

Discussion

The primary result of this study strongly favored teacher marking of student compositions over computer marking. Students liked the more personal nature of the feedback from the teachers. They also preferred teacher marking because it was easier to understand, perhaps because the nature of the process enables the teacher to provide more specific comments at the relevant points in the manuscript whereas the computer feedback is more general and on a separate page. Many students also liked the fact that the teachers checked additional areas than those emphasized for the particular composition or preferred teacher marking because the teacher was their "writing audience" - the ultimate grader. Several students liked the computer for its thoroughness in catching mistakes; whereas several others thought it was too thorough, catching too many mistakes or some non-mistakes.

Although students preferred teacher marking over computer marking, data from the study indicate very positive student attitudes toward the use of computers for preparing their compositions. Ninety-three percent of the students thought that word processors made writing easier.

Seventy-three percent of the students indicated that they thought typed papers would receive higher grades over handwritten papers. During the study all of the student papers were mechanically reproduced as a result of using word processors, and the instructors commented that mechanical printing made the papers easier and faster to read.

Overall, 78% of the students responded that they would use a writing lab if one were available. Since the completion of this project, a twenty-one station Macintosh equipped writing lab has been installed at the school. Personal observation and network server logs indicate that the lab is busy before, during, and after school. There was a difference by sex on using a writing lab with 84% of the females indicating that they would use a lab while 69% of the males favoring use of a lab.

Personal help was the reason given most frequently by students for choosing teacher marking. Examination of teacher-marked papers revealed that both teachers often used students' first names when writing comments on the papers. The teachers often included references to other personal matters or events, and may thereby have increased students' feelings of personalization. Of course, just the more personal nature of marking by a human being rather than a computer may also contribute to those feelings.

Personalization of instruction can have an important effect on student learning (Anand, & Ross, 1987; Ross, & Anand, 1987). Other researchers (López, 1989) have generated personalized instructional programs by computer that produced better student achievement and/or attitudes than non-personalized programs. Personalization in these studies was accomplished by having each student complete an inventory of interests, including the names of friends, which were then incorporated into individualized learning materials for each student. Although these studies were conducted in the areas of math and logic, similar effects may have occurred with the two teachers in this study when they used the students' first names and personalized events when adding comments to the marked papers.

Personalization of feedback by computer on complex tasks may be more difficult to accomplish efficiently than personalization of initial instruction. Merely inserting the student's name, form letter style, into the computer analysis of the composition would probably not have the same effect as the teacher's personalized comments written directly on the students' papers. Despite advances in computer systems, it would seem that when dealing with student writing the teacher can react more appropriately to student needs, pinpointing problems and suggesting specific remedies, while maintaining rapport with the student.

The teachers were free to provide other types of feedback to the students on topics such as overall style. The students noted this in their questionnaire responses. In post-project interviews students commented that they were writing to the teacher's requirements. The teacher was the grader of the paper, and that if the teacher pointed out areas that needed additional work, this was all that needed fixing. Papers would receive a higher grade if the student fixed what the teacher marked. These facts should diminish any fears that when students use computers with proofing aids in language arts

classes "... there won't be anything left to correct" (C. Crowe, personal communication, 1985).

Students also liked the way that the teacher comments were placed directly on their papers, very near the problem. Students commented that they liked the grader to be alive and/or human. Other students commented that they thought teachers stopped checking after four or five mistakes. Some noted that the computer was exhaustive in finding all mistakes.

Several style-checker programs are currently available. Most are specific to a particular type of computer. MacProof[®] 2.0, the checker program used in this study, was compatible within the family of classroom computers available at the school.

The two teachers selected to participate in the study were young (24-26 years) male teachers recognized for their ability to work well with students. The popularity of these two teachers, familiarity with students, and the use of personalized remarks on papers may have influenced the selection made by students.

The teachers liked having the computer provide rudimentary analyses of the student papers in basic skills such as spelling, punctuation, vague terms and other areas, which freed up the teacher to work with students on "idea/creative" areas of the assignments.

In her chapter on Writing, Ellen Gagné (1985) points out that unskilled writers spend much of their time trying to avoid mechanical mistakes. Proofing programs allow writers to concentrate more on communicating well, leaving mechanics to be checked prior to the final draft. When the students are working at the computer, entering the composition, the teachers were able to circulate amongst the students, providing individual attention. Butler (1985) would see this as highly supportive of many of the features listed by Hairston (1982) as characteristics of the new composition paradigm.

One observation from the study was that teacher-marking and computer-checking in combination may be the most effective way to mark compositions. Based on the student selection of the teacher as grader and the teacher acceptance of the time saving/error catching capabilities of the computer program an effective combination would have both the teacher and the computer available to students. The computer serving the student as a tool in the writing, editing, and revising cycle, while the teacher provides overall instruction and personalized marking of papers. Version 3.2 of the MacProof[®] program operates as an interactive desk accessory. Students would be encouraged to pre-check their own papers with the help of the

computer to eliminate grammatical mistakes, allowing teachers to spend more time helping the students write better.

Additional research is needed to test the effectiveness of combining teacher personalization of feedback with the analytic capabilities of existing computer software. Combinations of direct student access of composition mechanics coupled with degrees of teacher involvement during the revision process could yield guidelines on how students can best be served by the availability of writing laboratories and computers.

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